CDB SEMINAR

Eran Meshorer

Department of Genetics, Institute of Life Sciences
The Hebrew University of Jerusalem

Tuesday, December 8, 2009
11:00~12:00 C1F CDB Auditorium

Delineating the molecular mechanisms of chromatin protein dynamics in embryonic stem cells

Summary

Embryonic stem cells (ESCs) are characterized by unique epigenetic features including decondensed chromatin, hyperdynamic association of chromatin proteins and permissive transcriptional program. Here, using fluorescence recovery after photobleaching (FRAP), we investigated the underlying mechanisms responsible for chromatin plasticity in ESCs. Using epigenetic drugs as well as mutant ESCs lacking various chromatin related proteins, we find that DNA methylation and nucleosome repeat length have little or no effect on chromatin protein dynamics in ESCs. In contrast, histone acetylation controls chromatin dynamics on euchromatin while histone methylation and Lamin A expression regulates chromatin dynamics on heterochromatin. Together, these data delineate the mechanisms responsible for chromatin plasticity in ESCs, and shows that the epigenetic state controls chromatin plasticity and differentiation potential of ESCs.

Host:
Hitoshi Niwa
Pluripotent Cell Studies, CDB
niwa@cdb.riken.jp
Tel:078-306-1930 (ext:1461)